

Notice of Allowability

Application No.

10/721,038

Examiner

Porfirio Nazario-Gonzalez

Applicant(s)

OSINSKI ET AL.

Art Unit

1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Examiner's amendment.
2. ☒ The allowed claim(s) is/are 1-27.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

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EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

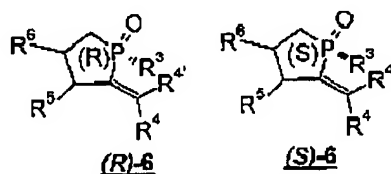
Authorization for this examiner's amendment was given in a telephone interview with Mr. David E. Wildman on August 8, 2005.

The application has been amended as follows:

In the claims:

Please amend claims 25-27 as follows:

25. An optical active compound selected from the group consisting of compounds of formulas (R)-6 and (S)-6 of formula 6



wherein R^{4'} and R⁴ is independently of each other hydrogen, alkyl or optionally substituted aryl; or

R^{4'} and R⁴ together, with the C-atom they are attached, form a 3-8-membered carbocyclic ring;

dotted line is absent or is present and forms a double bond;

R⁵ and R⁶ are independently of each other hydrogen, alkyl or aryl.

26. A process for the asymmetric hydrogenation of a prochiral olefinic or ketonic compound wherein the reaction is carried out comprising contacting a prochiral olefinic or ketonic compound with hydrogen in the presence of metal complex of formula formula II

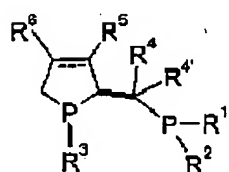


wherein

M is a transition metal,

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L is the diphosphine compound of the formula I

*cis*

I,

wherein

R^1 and R^2 are independently of each other unsubstituted alkyl, aryl, cycloalkyl or heteroaryl, or alkyl, aryl, cycloalkyl or heteroaryl each of which independently is substituted by alkyl, alkoxy, halogen, hydroxy, amino, mono- or dialkylamino, aryl, $-SO_2-R^7$, $-SO_3^-$, $-CO-NR^8R^9$, carboxy, alkoxy carbonyl, trialkylsilyl, diarylalkylsilyl, dialkylarylsilyl or triarylsilyl;

R^3 is alkyl, cycloalkyl, aryl or heteroaryl;

R^4 and R^4 is independently of each other hydrogen, alkyl or optionally substituted aryl; or

R^4 and R^4 together, with the C-atom they are attached, form a 3-8-membered carbocyclic ring;

dotted line is optionally a double bond;

R^5 and R^6 are independently of each other hydrogen, alkyl or aryl;

R^7 is alkyl, aryl or NR^8R^9 ; and

R^8 and R^9 are independently of each other hydrogen, alkyl or aryl;

the substituents R^3 on the phospholane phosphorus atom and the substituent on the C2 atom of the phospholane ring are in *cis* relation to each other as indicated by the bold bonds in formula I,

X is a coordinating anion,

m, n and p are each 1, and

q is 0, if M is Rh, or

wherein

M is a transition metal,

L is the diphosphine compound of formula I,

X is acyloxy,

m and n are each 1,

p is 2, and

q is 0, if M is Ru, or

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wherein

M is a transition metal,
L is the diphosphine compound of formula I,
X is Cl,
m and n are each 2,
p is 4,
q is 1, and
A is triethylamine, if M is Ru, or

wherein

M is a transition metal,
L is the diphosphine compound of formula I,
X is a π -methallyl group,
m and n are each 1,
p is 2, and
q is 0, if M is Ru, or

wherein

M is a transition metal,
L is the diphosphine compound of formula I,
X is a coordinating anion,
m, n and p are each 1, and
q is 0, if M is Ir, or

wherein

M is a transition metal,
L is the diphosphine compound of formula I,
X is Cl,
m and n are each 1,
p is 2, and
q is 0, if M is Pd, or

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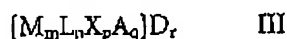
wherein

M is a transition metal,
 L is the diphosphine compound of formula I,
 X is Cl, Br or I,
 m and n are each 1,
 p is 2, and
 q is 0, if M is Ni, or

wherein

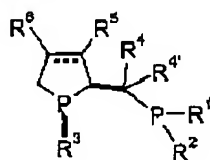
M is Rh,
 L is the diphosphine compound of formula I;
 X is a coordinating anion,
 m, n and p are each 1, and
 q is 0.

27. A process for the asymmetric hydrogenation of a prochiral olefinic or ketonic compound wherein the reaction is carried out comprising contacting a prochiral olefinic or ketonic compound with hydrogen in the presence of metal complex of formula III



wherein

M is a transition metal,
 L is the diphosphine compound of the formula I



cis I,

wherein

R¹ and R² are independently of each other unsubstituted alkyl, aryl, cycloalkyl or heteroaryl,
 or alkyl, aryl, cycloalkyl or heteroaryl each of which independently is substituted by alkyl, alkoxy,

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halogen, hydroxy, amino, mono- or dialkylamino, aryl, $-\text{SO}_2-\text{R}^7$, $-\text{SO}_3^-$, $-\text{CO}-\text{NR}^8\text{R}^8$, carboxy, alkoxy, carbonyl, trialkylsilyl, diarylalkylsilyl, dialkylarylsilyl or triarylsilyl;

R^3 is alkyl, cycloalkyl, aryl or heteroaryl;

R^4 and R^4 is independently of each other hydrogen, alkyl or optionally substituted aryl; or

R^4 and R^4 together, with the C-atom they are attached, form a 3-8-membered carbocyclic ring;

dotted line is optionally a double bond;

R^5 and R^6 are independently of each other hydrogen, alkyl or aryl;

R^7 is alkyl, aryl or NR^8R^8 ; and

R^8 and R^8 are independently of each other hydrogen, alkyl or aryl;

the substituents R^3 on the phospholane phosphorus atom and the substituent on the C2 atom of the phospholane ring are in *cis* relation to each other as indicated by the bold bonds in formula I,

X is a diene ligand,

D is a non-coordinating anion,

m, n, p and r are each 1, and

q is 0, if M is Rh, or

wherein

M is for a transition metal,

L is the diphosphine compound of formula I,

X is an olefinic ligand,

D is a non-coordinating anion,

m, n and r are each 1,

p is 2 and

q is 0, if M is Rh, or

wherein

M is a transition metal,

L is the diphosphine compound of formula I;

X is Cl, Br or I,

A is benzene or p-cymene,

D is Cl, Br or I, and

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m, n, p, q and r are each 1, if M is Ru, or

wherein

M is for a transition metal,
L is for the diphosphine compound of formula I,
D is a non-coordinating anion,
m and n are each 1,
p and q are each 0, and
r is 2, if M is Ru, or

wherein

M is for a transition metal,
L is for the diphosphine compound of formula I,
X is a diene ligand,,
D is a non-coordinating anion,
m, n, p and r are each 1, and
q is 0, if M is Ir, or

wherein

M is for a transition metal,
L is the diphosphine compound of formula I,
X is an olefinic ligand,
D is a non-coordinating anion,
m, p and r are each 1,
n is 2 and
q is 0, if M is Ir, or

wherein

M is a transition metal,
L is the diphosphine compound of formula I;
X is a π -allyl group,
D is a non-coordinating anion,

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m, n, p and r are each 1, and
q is 0, if M is Pd, or

wherein

M is for Rh,
L is for the diphosphine compound of formula I,
X is a diene ligand,
D is a non-coordinating anion,
m, n, p and r are each 1, and
q is 0, or

wherein

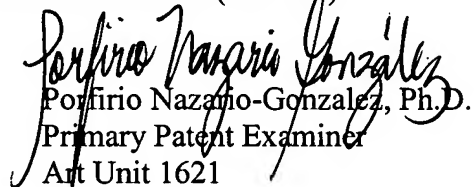
M is for Rh,
L is for the diphosphine compound of formula I,
X is an olefinic ligand,
D is a non-coordinating anion,
m, n and r are each 1,
p is 2 and
q is 0.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Porfirio Nazario-Gonzalez whose telephone number is 571-272-0641. The examiner can normally be reached on Mon.-Fri. (9:30 AM - 6:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Porfirio Nazario-Gonzalez, Ph.D.
Primary Patent Examiner
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August 9, 2005